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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/804,647

03/19/2004

Nan-Jung Chen

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09/15/2006

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EXAMINER

HIRL, JOSEPH P

ART UNIT

PAPER NUMBER

2129

DATE MAILED: 09/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/804,647

Applicant(s)

CHEN, NAN-JUNG

Examiner

Joseph P. Hirl

Art Unit

2129

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>A1</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-10 are pending in this application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Suresh et al (IEEE, 0018-9529/94, Fuzzy-Set Approach to Select Maintenance Strategies of Multistate Equipment, referred to as ***Suresh***).

Claims 1, 8, 9

Suresh anticipates selecting a plurality of factors relevant to the remaining lifetime of the part, the plurality of factors including a number of semiconductor wafers that have been processed by the piece of semiconductor fabrication equipment since the part was installed in the piece of equipment (**Suresh**, p451, c2:16; Examiner's Note (EN): ¶ 7 applies; from the summary, Suresh details a fuzzy-set model for maintenance policy of multistate equipment where the model is based on equipment condition and remaining life; total wafers produced to date would be part of the fuzzy variables); and estimating the remaining lifetime of the part by a fuzzy inference (**Suresh**, p452, c1:5-8;

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Suresh @ p452, c1:5-8 establishes the degrees of fulfillment related to the remaining lifetime).

Claim 2

Suresh anticipates the plurality of factors include a length of time that the part has been used (**Suresh**, p452, c2:9-13).

Claim 3

Suresh anticipates replacing the part when the estimated remaining lifetime falls below a threshold value (**Suresh**, p452, c1:15; EN: from p454, Table 3, such would be the condition with $t = 0$).

Claims 4, 7, 10

Suresh anticipates the fuzzy inference is based on the following fuzzy rule set, in which P is the number of semiconductor wafers that have been processed by the piece of semiconductor fabrication equipment since the part was installed in the piece of equipment (**Suresh**, p452, c2:3-7; EN: creating M_j ; u_j is the utility of condition M_j which functionally represents the production of the semiconductor wafers), T is the length of time that the part has been used (**Suresh**, p451, c2:14; n); and L is the remaining lifetime of the part (**Suresh**, p451, c2:21; t): if P is small, and T is small, then L is large; if P is medium, and T is small, then L is medium; if P is large, and T is small, then L is small; if P is small, and T is medium, then L is large; if P is medium, and T is medium, then L is medium; if P is large, and T is medium, then L is small; if P is small, and T is large, then L is medium; if P is medium, and T is large, then L is medium; and if P is large, and T is large, then L is small (**Suresh**, p 454, Table 3; EN: each column is

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appropriately judged related to the above references and Fig. 8 of the specification; empirical experiences are cited by Suresh @ p452, c2:3-7).

Claim 5

Suresh anticipates the fuzzy inference is based on a fuzzy rule set determined using empirical experience (**Suresh**, p451, c1 Summary & Conclusions; c451:Introduction).

Claim 6

Suresh anticipates the step of automatically collecting the following data for the part: the number of semiconductor wafers that have been processed by the piece of semiconductor fabrication equipment since the part was installed in the piece of equipment, and the length of time that the part has been used (**Suresh**, p451, c1:Introduction; EN: a fully automated system would provide for appropriate record keeping notwithstanding the need for critical maintenance decisions).

Examination Considerations

4. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ

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541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The

Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

5. Examiner's Notes are provided with the cited references to prior art to assist the applicant to better understand the nature of the prior art, application of such prior art and, as appropriate, to further indicate other prior art that maybe applied in other office actions. Such comments are entirely consistent with the intent and spirit of compact prosecution. However, and unless otherwise stated, the Examiner's Notes are not prior art but a link to prior art that one of ordinary skill in the art would find inherently appropriate.

6. Unless otherwise annotated, Examiner's statements are to be interpreted in reference to that of one of ordinary skill in the art. Statements made in reference to the condition of the disclosure constitute, on the face of it, the basis and such would be obvious to one of ordinary skill in the art, establishing thereby an inherent prima facie statement.

7. Examiner's Opinion: ¶¶ 4-6 apply. The Examiner has full latitude to interpret each claim in the broadest reasonable sense.

Conclusion

8. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- Kawai et al, USPN 5,778,279
- Lin et al, USPN 7,035,770
- Rangarajan et al, USPN 6,878,560
- Sun, USPN 6,240,329
- Hekmatpour, USPN 5,720,007

9. Claims 1-10 are rejected.

Correspondence Information

10. Any inquiry concerning this information or related to the subject disclosure should be directed to the Primary Examiner, Joseph P. Hirl, whose telephone number is (571) 272-3685. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David R. Vincent can be reached at (571) 272-3080.

Any response to this office action should be mailed to:

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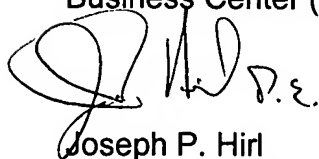
Alexandria, Virginia 22313,

(located on the first floor of the south side of the Randolph Building);

or faxed to:

(571) 273-8300 (for formal communications intended for entry.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).



Joseph P. Hirl
Primary Examiner
September 13, 2006